

# RCPE Respiratory Symposium: Dark clouds or blue skies?

**Held on 25 February 2010 at the Royal College of Physicians of Edinburgh**

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**DECLARATION OF INTERESTS** No conflict of interests declared.

Respiratory medicine is facing many challenges: the H1N1 pandemic, the emergence of resistant strains of tuberculosis and the rise of nosocomial infections; while the burden from chronic diseases such as asthma, chronic obstructive pulmonary disease (COPD) and bronchiectasis continues largely unabated. This symposium explored the impact these challenges may have on the future of respiratory medicine, including the need for more respiratory specialists.

## SESSION ONE FUTURE THREATS FROM RESPIRATORY DISEASE

The rise of H1N1 was reviewed by Professor John Oxford (Queen Mary University of London). The associated illness, which for the most part has been mild in the UK, has exerted considerable morbidity and mortality elsewhere. Those particularly at risk of severe infection include the young, the obese and the pregnant. Mass vaccination is an effective preventative strategy and the early use of neuraminidase inhibitors reduces the severity and duration of illness; however, new antiviral targets are needed particularly as further evolution of the influenza virus remains likely.<sup>1</sup>

The global threat from tuberculosis (TB) remains substantial, with an 8.8 million annual incidence of new cases. Of particular concern is the increasing incidence (currently 5.3%) of multi-drug resistant TB (MDRTB), defined as resistance to isoniazid and rifampicin. The consequences of MDRTB are significant, involving prolonged and costly treatment regimens with a greater associated risk of adverse treatment reactions; the prognosis is also poor (up to 37% mortality). Dr Marc Lipman (Royal Free Hospital, London) reminded us of the need to consider the possibility of MDRTB, particularly in the context of high-risk individuals including geographical location, HIV co-infection, and a previous history of incomplete treatment. In the UK advice can be sought from the National MDRTB service, but treatment ought to be undertaken only by specialist centres.

Professor Nathwani (Ninewells Hospital, Dundee) reminded us that hospital-acquired pneumonia is the second most common nosocomial infection, accounting

for 0.5–1% of inpatient admissions. Up to 50% of ventilated patients will develop ventilator-associated pneumonia. Risk factors for both include comorbid illnesses, injuries and interventions such as corticosteroids and ventilation. The risk of multi-drug resistant organisms increases with prolonged hospital stay, recent antibiotic treatment and immunosuppression. Early identification of the pathogen is critical to delivering targeted antimicrobial therapy. Management can be improved by the prompt initiation of treatment and the use of scoring systems such as the Clinical Pulmonary Infection Score.<sup>2</sup>

## SESSION TWO FUTURE STRATEGIES IN THE ASSESSMENT OF LUNG DISEASE

Dr Dhaliwal (University of Edinburgh) reviewed the potential of functional molecular imaging to provide new insights into the key mechanisms of inflammation in respiratory disease. He described the use of chemistry to develop novel probes that can be used to target specific cells or products of cellular reactions. Combined with optical imaging, such probes have the potential to facilitate real-time observation of the recruitment and activation of inflammatory cells as it occurs in vivo, creating the potential to redefine mechanisms of disease in more precise pathophysiological terms.

It is well established that the earliest inflammatory and structural abnormalities of many chronic lung disorders occur in the small airways, but these are largely undetectable by commonly employed lung function tests. Professor Gustafsson (University of Gothenberg, Sweden) reviewed the use of an inert gas washout technique which can measure early and subclinical damage occurring in the peripheral airways and acinae. Work with this technique in patients with cystic fibrosis has shown evidence that the lung clearance index calculated using multiple breath washout testing relates more closely to the severity of structural lung disease as assessed by computed tomography of the chest than forced expiratory volume in one second or forced expiratory flow 25–75% measurements. Multiple breath washout testing is a non-invasive, pertinent procedure easily performed in paediatric and adult patients.<sup>3</sup>

## THE RW PHILIP LECTURE

The RW Philip Lecture was delivered by Professor Sir Ian Wilmut (Centre for Regenerative Medicine, University of Edinburgh) and focused on the opportunities that stem cells may provide to understand disease pathogenesis, accelerate drug discovery and develop cell therapies. Stem cells are an ideal research tool as they can be taken from a genetically selected and phenotypically uniform population and used repeatedly over many years. Recent work has involved developing protocols for induced pluripotent stem (iPS) cells.<sup>4</sup> Professor Wilmut used lung epithelium to exemplify how such iPS cells could be used to study T cell activation and suppression in asthmatic and healthy individuals.

## SESSION THREE FUTURE DIRECTIONS FOR AIRWAY DISEASE

Despite the development of several highly effective therapies for asthma, morbidity and mortality remains unacceptably high. Professor Stephen Holgate (University of Southampton) presented a historical overview of the development of asthma therapies but drew particular attention to the disappointing clinical results from strategies directed at targeting the allergic cascade in humans. He suggested that more research should focus on the role of the innate immune system and the development of novel agents to target a dysfunctional epithelium. He also emphasised the potential heterogeneity of asthma suggesting that improved phenotyping of patient subpopulations may allow more specific treatments to be delivered.<sup>5</sup> Finally, given the limitations of animal models he reviewed the potential to develop disease-related in vitro human models to test novel therapeutics.

Bronchiectasis is a chronic, debilitating condition. Pathologically, a vicious cycle of infection and inflammation exists in the permanently damaged airways with patients suffering a persistent cough, chronic daily sputum production and recurrent chest infections. Despite these debilitating symptoms, research to date has been limited. Dr Diana Bilton (Royal Brompton Hospital, London) provided an overview of the current literature and discussed approaches to management, including stratification of patients for intervention, possible endpoints to measure treatment response and presented data supporting the potential role of mannitol.

## REFERENCES

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## SESSION FOUR DEBATE: ARE THERE TOO MANY RESPIRATORY SPRS TRAINING IN SCOTLAND?

The Scottish Government have proposed to cut the number of trainees in Scotland. Given the current and predicted future burden of respiratory illness as well as the unmet needs from the impact of respiratory disease on health it is perhaps not surprising that from the outset the majority of the audience opposed this. Against this backdrop, Dr Alastair Cook (Senior Medical Officer, Scottish Government Workforce Directorate) presented data suggesting that Scotland faced a potential oversupply (an estimated 362 between 2010–14) of fully trained registrars for all medical specialties. He explained that it was both necessary and responsible to attempt to match the number of training posts more closely to the anticipated consultant workforce. He also highlighted that more care is expected to be delivered in the community and that other healthcare workers are undertaking expanded roles in service provision.

By contrast, Professor Andrew Greening (President, Scottish Thoracic Society) suggested that, while in itself this was not an unreasonable proposition, the methods for calculating such numbers are notoriously inadequate to the task, with past attempts resulting in spectacular failure. He argued that it would be more appropriate to approach the problem by calculating the units of work undertaken, for example the number of clinics to be delivered, which would be more representative of the overall burden of work and allow for the changing nature of the emerging consultant workforce. He also suggested that not all respiratory trainees will practise solely in respiratory medicine: the specialty has a history of training potential intensive care specialists, public and occupational health physicians, to mention but a few. At the final count only two individuals stood in support of Dr Cook.

## CONCLUSION

This symposium involved keynote speakers and provided excellent insight into both current and future challenges posed in respiratory medicine. The potential clinical application of current research areas discussed in terms of disease assessment and therapeutic intervention is exciting and exemplifies the need, as well as reflecting the audience's opinion, that there should be more respiratory trainees in Scotland.

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